for a test with no known benefit, such as a coronary calcium scan. While it is true that the risk of cancer would be beyond the end of the Obama presidency, it is also true that there is no benefit that will accrue during the presidency (or afterwards) from a coronary calcium scan. Also, a false-positive result could have resulted in the President being subjected to an invasive procedure such as coronary angiography, with additional harms, including further radiation, the need for sedation for several hours rendering him incapable of performing his duties, and a small but finite risk of complications, including death. Dr Einstein’s suggestion that starting a lipid-lowering medication based on coronary calcium score is “more likely to be beneficial than harmful” is pure speculation. There is no data showing any mortality benefit of lowering lipid levels for primary prevention, particularly in low-risk men, such as the President, and a coronary calcium scan would not change that.

It is indisputable that the most powerful way for President Obama to reduce his cardiac risk is to stop smoking—a step that will decrease by 72% his chance of a cardiac event in the next 10 years, taking him from a 7% to a 2% ten-year risk (http://hp2010.nhlbihin.net/atpiii/calculator.asp). And one does not need to perform a CT scan to recommend smoking cessation or the other healthy lifestyle changes that the President is already implementing. Even for the President, we must remember that less is more.

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The Perfect Storm Abates

Scholars in the medical field are, not surprisingly, influenced by popular culture. MEDLINE searches for several movie titles were performed, restricted to the title field. The Figure shows the number of times the title words of several popular movies were located from 1993 through 2009. There appears to be an association between the release date of the movies listed and the number of titles located subsequently. In the case of “mission impossible,” the 2 recent peaks may be related to the release of sequels in 2000 and 2006. The trend in the use of “perfect storm” is certainly the most remarkable. In 2008, this phrase appeared on Lake Superior State University’s well-known List of Banished Words,1 which may be 1 reason for the decreased use since then. Perhaps “perfect storm” has infiltrated the medical literature because it captures, in popular language, what Harrison’s Principles of Internal Medicine2 would refer to as a coalescence or concurrence of clinical factors. Or perhaps the huge waves in the movie seem to fit the tumult of our health care system. Although the future is up in the air, using the title of the highest grossing film of all time will require an author to be the very avatar of creativity.

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The Impact of a Standardized Curriculum on Reducing Thoracentesis-Induced Pneumothorax

We are pleased to see that the findings presented in “Pneumothorax Following Thoracentesis: A Systematic Review and Meta-analysis”1 specifically substantiate our simulation-based, blended curriculum for procedural instruction. In 2007, we implemented a comprehensive approach to teaching multiple invasive bedside procedures, among them thoracentesis. In the context of a dedicated medical procedure ser-

Figure. Number of titles in MEDLINE containing popular movie names.
vice, our curriculum is targeted to internal medicine house staff and implemented at a tertiary care, academic medical center with a primary affiliation with a US medical school.

In addition to using the recommended criteria for improving patient safety highlighted by Gordon and colleagues (development of comfort, real-time ultrasound guidance, direct supervision by expert faculty, team-based approach, and a simulation-based educational program), we have integrated a validated checklist into our training paradigm. We believe that this is a significant component of the curriculum, since adherence to a checklist has been shown to decrease complications during procedural performance.

After performing 285 thoracenteses, our overall pneumothorax rate was 2.1%, which is significantly better ($P = .009$) than the 6% rate reported in the meta-analysis. We contend that this is a result of our application of the elements described in the review, coupled with the use of the checklist. In addition to reduced complication rates, our residents have demonstrated an improvement in medical knowledge, technical skill, and self-reported confidence and competence.

Procedural complications compromise patient safety, and adverse events result in prolonged inpatient stays, increased health care costs, and significant morbidity and mortality. Therefore, we believe that a widespread adoption of our standardized, simulation-based, blended curriculum for teaching invasive bedside procedures, as reinforced by the findings in the meta-analysis, will make a significant impact on patient safety by improving proficiency and confidence of trainees.

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We appreciate the comments of Lenchus et al regarding our article. We agree that our findings of lower pneumothorax rates with ultrasonography guidance and more experienced operators may support the concept of a medical procedure service to improve patient safety. Medical procedure services have improved house officer comfort and reduced complication rates for thoracentesis and other procedures.

Lenchus et al have incorporated a checklist as an element of their medical procedure service. Checklists have been described most frequently in the surgical literature but also have increasingly been used during simulation-based resident education in bedside internal medicine procedures.

However, we caution that the favorable results reported by Lenchus et al should be interpreted prudently and that direct comparisons between their results and ours may not be valid. Without information on patient and procedural characteristics, including the risk factors described in our research, the interpretation of their low pneumothorax rate is limited. It would also be helpful to know their pneumothorax rates before the initiation of their medical procedure service.

In our meta-analysis, we calculated a summary estimate of the rates of pneumothoraces across a range of potentially heterogeneous studies and subsequently explored reasons for the heterogeneity. Pneumothorax rates ranged from 0% to 19%, with considerable variability in the setting (intensive care unit vs hospitalized), effusion size, operator experience, and other characteristics, each of which may contribute to the variability in pneumothorax rates. Lenchus et al report a low pneumothorax rate, but without information on these covariates it is difficult to compare it with our meta-analysis in a meaningful manner.

We are encouraged by the preliminary findings of Lenchus and colleagues and look forward to the publication of their article, which will be an important contribution to our understanding of interventions to lower the risk of pneumothorax following thoracentesis and to improve patient safety.

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